

REMARKS

The specification has been amended to obviate the informality at Page 3, line 15 objected to in the Office Action and to correct a similar typographical error at line 32.

Claim 1, the only independent claim, has been amended to more particularly claim the invention, and now specifically states that the means for spraying water is/are so adapted that a portion of the sprayed water is mixed with and taken along with the conveyed generated steam as it exits the at least one steam outlet opening. Additionally, Claims 6 to 10 have been added to claim the subject matter originally claimed via multiple dependency, which multiple dependent claims were cancelled by Preliminary Amendment. Accordingly, Claims 1 to 10 are now in this case.

This invention relates to an electric steaming device comprising a housing, a steam generator having a base, heating means for heating the base of the steam generator, a water reservoir, at least one steam outlet opening, means for feeding water from the water reservoir into the steam generator, and at least one passageway for conveying steam from the steam generator towards the at least one steam outlet opening. Steam generated in such devices known in the prior art is generally rather dry and ineffective since for an easy removal of wrinkles, a garment should be moistened efficiently, which means that a good ironing result requires the steam discharged from the outlet openings of an iron to contain more water than obtained by the usual steam generation. The present invention provides an electric steaming device in which a wet steam is generated.

According to the invention, this is achieved employing means for feeding water into the steam generator which comprises at

least one spray nozzle for spraying water onto the base of the steam generator. The advantage of this arrangement is that water is sprayed over a relatively large surface area of the base with very fine water droplets, and thus steam is continuously generated over a large surface. The result is that the steam production is much higher per unit time than obtained by the known devices. Some of the sprayed water in the form of very fine droplets is mixed with and taken along with the generated steam. In this way a kind of wet steam, also referred to as mist, is obtained which is, for example, favorable for moistening garments in an ironing process or for obtaining vapor for a facial treatment or for steam cleaning. In preferred embodiments of the steaming device:

the heating means for heating the base of the steam generator comprises a resistive track of a thick-film printed circuit. A uniform heating of the base is obtained with a thick-film heating track applied to the base. The heated base reaches the desired temperature for steaming very rapidly. Moreover, the construction of the steam generator can be made lightweight; and

the means for feeding water into the steam generator comprises an electric pump. Dosing of the amount of water to the nozzle and thus the amount of water spray can be easily adjusted by means of an electric pump. Also the location of the water reservoir relative to the steam generator can be freely chosen and is not dependent on gravity;

in operation, after powering the iron, the user can start the pump 6 by means of an operating knob 21. Water is pumped from the water reservoir 4 to the nozzle 10. A spray of water 22 is injected onto the heated base 12 of the steam generator 5 for a continuous and instantaneous generation of steam 23. Some of the sprayed water in the form of very fine droplets is mixed with and

taken along with the generated steam towards the outlet 16. In this way wet steam 24 is obtained which flows through the passageway 17 and the distribution channel 18 to the steam outlet openings 16. As set forth in the specification, tests have shown that, with a thick-film heating element of 1500 W and a surface area of the base 12 of about 42 cm², the steam production rate is 48 grams per minute, which is much higher than can be obtained by the existing household irons; and

the operation of the facial sauna is similar to that of the steam iron just described. A spray of water 122 is injected onto the heated base 112 of the steam generator 105 to generate steam 123 instantaneously. Some of the sprayed water is mixed with and taken along with the steam towards the outlets 115. The obtained wet steam or water vapor 124 enters the chamber 118 and flows to the outlet opening 116 of the vapor delivery nozzle 116a.

Claims 1, 3 and 5 stand rejected under 35 U.S.C. 102 (b) as being anticipated by Burian, U.S. Patent 4,616,122.

Claims 1 and 4 stand rejected under 35 U.S.C. 102 (b) as being anticipated by Farrington, U.S. Patent 5,345,703.

Claim 2 stands rejected under 35 U.S.C. 103 (a) as being unpatentable over Farrington in view of Van der Meer, U.S. Patent 5,042,179 or over Burian et al in view of Van der Meer.

Reconsideration of the claims as amended and withdrawal of the rejection is respectfully requested.

Burian and Farrington et al both fail as anticipations of the present claims since, in addition to other omissions of disclosure relevant to the present invention, neither reference contains a spray nozzle for spraying water onto the base of a steam generator wherein the means for spraying water is so adapted that a portion of the sprayed water is mixed with and taken along with the

conveyed generated steam as it exits at least one steam outlet opening. Burian in fact teaches away from the invention and provides anti-sputter baffles to prevent liquid droplets from being discharged with the steam. (See the Abstract and column 3, lines 57 et. seq.). Similarly, Farrington et al does not disclose a spray nozzle for spraying water into the steam chamber. At col. 3, line 48 a spray nozzle 48 is disclosed to be mounted at the forward or nose portion 16 to enable the user to spray water onto the fabric to be ironed which is in the path of movement of the iron. Steam is not involved in this external water spray. A jet of water (described as a stream by patentee at col. 4, lines 46 et. seq.) is introduced to make steam. This is not a spray over a larger area and appears to be similar to the prior art device described in the present specification at page 1, for example, US 3263350 which describes an electric steam iron in which the means for feeding water from the water reservoir into the steam generator comprises a valve which permits controlled amounts of water in the form of droplets to enter the chamber of the steam generator, wherein water released by the valve drips on the base in one location, and from this location it flows by gravity along the base for evaporation. (Cf. Fig. 3 of Farrington et al). Steam generated in this way is generally rather dry and is not the wet steam produced according to the present invention.

Van der Meer does not cure the deficiencies of the primary references and is insufficient to render the invention obvious when combined with either or both references. The rejections are untenable and should be withdrawn.

In view of the above remarks, it is respectfully submitted that the present application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

Respectfully submitted,

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